

Welcome to Gateway



Prestel Gateway

Preface

Prestel was introduced in September 1979 by British Telecommunications as the first public viewdata service in the world. It has since proved itself to be a uniquely effective medium for communication.

It operates by using specially modified television sets and normal telephone lines to give rapid access to Prestel's large computer store of information.

Now Prestel is launching Gateway, a new facility that will enormously increase its power.

This brochure is intended to give essential information to executives who are engaged in determining their organisations' marketing, communications and data processing developments.

It describes the most important aspects of Gateway — the facilities, the working principles and how it can be most effectively exploited in a variety of market and in-house situations.

A Glossary of terms has been provided for any readers unfamiliar with viewdata terminology.

A summary of Prestel History

1971 The viewdata idea conceived by Sam Fedida at the British Telecom Research Laboratories.

1976 First viewdata trial, conducted in-house.

1979 March. Public trial conducted at London, Norwich and Birmingham.

1979 September. Opening of London public Prestel service.

1980 October. Prestel network affords 62% of telephone population local telephone call access to Prestel.

1981 April. Over 10,000 Prestel sets in use. More than 500 organisations providing information.

1982 March. Introduction of Prestel Gateway.

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Why Select Prestel?

Prestel is a recent development which, at first glance, may not appear very different from a range of other computer systems. However, before considering the benefits that can accrue by using Prestel Gateway, it is helpful to consider Prestel against the alternatives.

On-line systems in the past have generally been difficult to implement, needing specialist training, and expensive terminal equipment and modems. In making the change to Prestel, a number of contrasts become apparent. These contrasts are in the areas of terminal cost and setting up and system operation.

A large number of companies are manufacturing viewdata terminals to the same specification. This means that the Prestel customer can choose the most suitable product in complete confidence that it is compatible with the range of viewdatabases available.

The internationally agreed terminal standards can handle coloured characters, coloured backgrounds and graphics. Reduced facility terminals such as black and white sets are also available, as are viewdata adaptors for conventional TV sets, at suitably lower prices.

Installations can be speedily provided, as terminals are available off the shelf from the TV manufacturing and retail industry.

In order to connect terminals to the telephone network, all that is required is the appropriate socket, installed by British Telecom.

The terminals are easy to use and are designed to automatically dial the phone number of a computer and 'log-on' to Prestel. Once connected, the operating commands are straightforward and can normally be mastered in around five minutes.

The operation and administration of the system, including user billing is taken care of by Prestel.

The Prestel system is cheap to use, as its extensive network gives local telephone call access to 62% of UK telephones, including all the major conurbations.

When the system specifications were written, great emphasis was placed on the terminal to ensure that the sets could be manufactured using mass production techniques. This is now resulting in a significant price differential between viewdata terminals and the nearest rival offerings in the colour VDU market.

To summarise, it is now cost-effective to place terminals at far more of the work places where information is required — not only in the data processing department, but also on a manager's desk and in the homes of field staff and directors.

Introduction to Gateway

Prestel Gateway is a facility that allows a conventional Prestel user terminal to be connected via Prestel to an 'external' private computer (EC). The link between Prestel and the EC is provided by the Packet Switched Service, (PSS), British Telecom's public data network.

Gateway is a means of adding the more powerful features of many 'in-house' computers to those offered by Prestel. It therefore serves to ally Prestel's broad customer base to the specialised facilities supplied by these private computers.

The alternatives to this can be less attractive and involve transcribing information onto Prestel or using private systems which may not be widely known or easy to access.

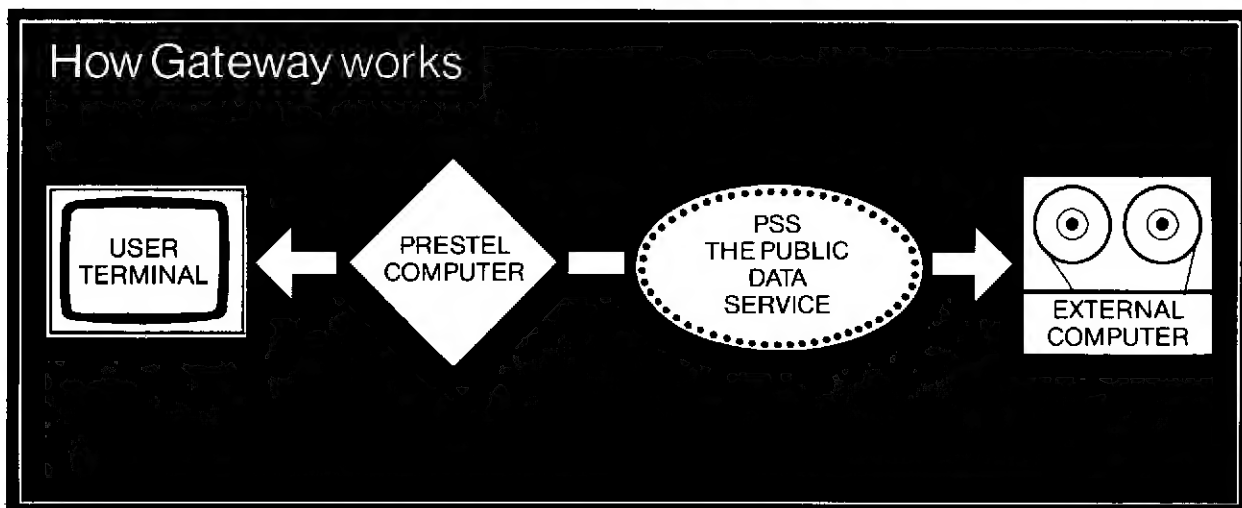
Gateway is an extension of Prestel, introducing the potential for information storage on an increased scale, and for greater interaction with users.

Main Features

Gateway adds two main facilities to the existing wide repertoire of the Prestel service:

- Information Retrieval from the external computer. Gateway allows the EC to transmit one or more frames (or screens) of data in response to a user's single request for information. This could be used for updating and other purposes.
- Data Collection from the user. This gives the capability to collect information from the user, and pass it immediately to the EC.

This development adds considerably to the possibilities of data capture using Prestel.



Gateway works like this

An ordinary Prestel receiver is connected to a computer anywhere in the country by a series of links. First there's the local Prestel computer; PSS, the Public Data Service; and finally the host computer itself.

Gateway in the Marketplace

Applications

Gateway's introduction sets a new standard in Prestel capability, and so the question of uses should be analysed in a fresh light. The six examples given below illustrate in varying degree the general ability of Gateway to handle

- Customised services — *information particular to individual customers.*
- Data capture — *collection of complex data made easy.*
- Rapidly changing data — *real time operation for highly volatile information.*
- 'Encyclopaedic' databases — *simple access to archives.*

Each of the following applications uses one or more of these features.

Banking

Gateway can be utilised both in-house and externally to improve services for bank customers. Used internally, the low cost of vicwdata terminals makes their use cost-effective in a wide range of applications, extending from back office account administration to the local training of staff. Gateway can improve staff utilisation and enables a faster response to customer inquiries.

With increasing penetration of sets among bank customers, both corporate and private, services could include:

- Accessing statements and ordering cheque-books.
- Handling loan enquiries and showing repayment options.
- Stopping cheques.
- Amending standing orders.
- Effecting funds transfers.

These operations could be carried out either in banking halls, business premises or the customer's home. Security can be introduced at whatever levels are considered necessary.

Mail Order

Gateway will improve the marketing of mail order companies to their agents in three areas:

- It reduces the difficulties that agents in the field have in effectively communicating orders to their Head Office.
- It allows purchase decisions to be confirmed immediately — a major selling edge.
- It reduces the lead time between purchase decision and delivery.

The simplicity of using Prestel Gateway with its rapid search and interactive facilities allows agents to provide a better service to their clients. This is achieved by speeding up transactions, by offering alternative goods when necessary, and by showing the state of the agent's account and the delivery status of earlier orders.

These benefits strengthen a mail order company's market position, both against fellow mail order ventures and normal distributed retailing.

Airline and Tour Operator Reservations

Providing up to the minute information plays a major part in the successful marketing of holiday and travel services. Prestel provides an impressive range of information such as schedules, prices and related subjects. After the initial information search, telephone calls and other means of communication are currently used to confirm availability.

The introduction of Prestel Gateway allows travel agents to enjoy an enhanced form of 'one-stop shopping'; that is,

transferring quickly and easily between information providers' information on the Prestel-resident database.

One enhancement is that after gaining access to the most suitable database, data collection frames could be used to provide a rapid Keyword search for detailed availability of the exact service the consumer wants.

Then a booking can be made and immediately confirmed, or an alternative service offered to the user.

By handling the information search, the booking and the confirmation, Prestel Gateway should cut down substantially on the time that the travel agent takes to deal with each customer.

Investment Markets

Gateway offers increased viewdata potential for monitoring shifts in the world's more volatile markets. Foreign exchange rates, interest rates, and commodity, stock and bond prices will be the main candidates for transmission via Prestel. Gateway provides the opportunity for almost instantaneous updating. Larger databases can be provided to give support data on market trends and less volatile statistics.

The information provider may use passwords to prevent any unauthorised access to sensitive information.

Company Searches and Business Services

Two major factors affect this market; the user's need for comprehensive database coverage, and the relatively low number of accesses to individual items of data.

Prestel offers a broad and effective package of business information, including summaries of company performance. However it can be costly to maintain databases and indexes that are sufficiently comprehensive to ensure user confidence.

Using Gateway, the IP can offer his entire database to users without the need for

replication. Searches could be speeded up by using data collection frames for keyword indexing. Additionally, Gateway can be used to input a user's data to an EC for analysis, with the results being returned immediately. Specialist services such as financial modelling could be made more widely available.

Businessmen will want to access a range of databases and services including their own companies' computers. Through Prestel Gateway this can all be achieved from one desk top terminal.

Organisational Communications

Though it is commonplace now for many company operations to be computerised, current reports from most systems can be difficult to obtain outside the computer room. Prestel can quickly spread information to those who need it.

Some typical examples of problems which Gateway can solve are:

- Providing company information to senior executives in their homes.
- The manager filing returns to head office but remaining ignorant of his overall performance.
- Production staff needing better information on sales trends.
- Regional staff and independent agents needing to know stock availability and having the ability to place orders.
- Informing suppliers of the optimum timing of deliveries to minimise stock holdings.

The benefits of Prestel, the low cost of terminals and the economy of local call access can justify placing sets on a far wider scale than has been cost effective up to now.

Improved communications will mean better co-ordination with resulting cost savings.

Why use Gateway?

To be able to assess where Gateway fits in the context of the viewdata market, it is important to look into the differences between the public Prestel service and private viewdata systems.

Prestel is a national viewdata bureau with information retrieval centres distributed to give 62% of UK telephone users the economy of local telephone call access. It handles the networking, operational and administrative tasks leaving IPs free to exploit the information handling capability.

Private Viewdata Systems generally consist of a single computer installation. They offer the strength of being designed to the specialised requirements of their users. However, accessing the system is liable to incur trunk telephone calls unless it is provided with an extensive nationwide network. A significant number of phone lines and associated data transmission equipment will be required to connect user terminals. Additionally, the PVS operator may find it uneconomic for infrequent users to access his database, due to the cost of maintaining files of user details and billing these customers.

Prestel Gateway provides the advantages of the tailored database structure of the private viewdata system coupled with national networking and administrative advantages. In addition, Prestel offers

- **User-friendliness;** Prestel utilises much simplified logging-on procedures, supplies a single consistent indexing system and employs a standard set of commands.

- **'One-stop shopping';** Gateway enables Users to switch quickly and easily between external databases without laboriously having to phone up each computer in turn.

To the Information Provider some of the advantages are:

- **Networking** — the flexibility and capacity of Prestel's extensive network allows the savings through economies of scale to be passed on to IPs. This is backed by BT's considerable expertise in Network Management.

- **Preprocessing** — interfacing the user-friendly commands of Prestel to an efficient computer to computer message protocol designed to minimise data network costs. For example, preliminary vetting of captured data and provision for correction of keying errors are available.

- **Filtering** — by having frames on the Prestel resident database the IP could satisfy general enquiries without using valuable processing time. It may therefore be possible to use a less powerful external computer.

- **User Management** — Prestel Regional staff support users looking after details such as Customer Service, Revenue Collection, Maintenance and operation of the local Prestel computers.

The Facilities

Operating via Gateway involves providing information and running the external computer. For simplicity, those who do either are known as External Information Providers (EIP).

Connection to the External Computer

The user first calls Prestel, and employing the normal Prestel commands accesses a special 'Gateway' frame. Connection to the EC can then be established. EIPs may have more than one Gateway frame, capable of leading to the same or up to 99 different points within their external database. The Gateway frame is set up by the EIP who must be an Information Provider (IP) or sub-IP on the Prestel-resident database. Access to his external database can be controlled by placing the Gateway frame in a closed user group. Alternatively a password facility can be incorporated in the Gateway frame.

The user keypad commands required to access frames held in the external database are similar to those used when accessing Prestel-resident frames. Additionally the external database frame format follows the Prestel standard, and these two factors combine to make the retrieval of information from the EC as easy as from Prestel's own database.

Once connected to the EC, the user can only access frames held within its database. He must exit from the EC to go back to frames held on the Prestel-resident database.

External Information Retrieval

This is substantially the same as retrieving frames from Prestel, but with the addition of two facilities, the Combine function and Unsolicited Frames.

The Combine Function allows a frame to be updated with additional or replacement characters, or even complete lines, without the screen first being cleared. This reduces

the amount of data transmitted from the EC thereby minimising the PSS costs.

The Unsolicited Frames facility allows the EC to transmit a potentially unlimited succession of frames without the need for user intervention. This allows the EIP to update displayed frames in real time.

Data Collection

This appears similar to the Prestel response frame but is more flexible and user friendly. A Data Collection frame is retrieved from the external database in exactly the same way as other frames, and comprises text and data collection fields. Three types of field are defined:

- 'Protected' fields cannot be altered by the user but are completed automatically by the EIP. A typical example would be sequential order serial numbers.
- 'Unprotected' fields are filled in by the user with the aid of individual field prompts which appear on frame line 23. Up to 62 fields are available on each data collection frame, compared with only 24 on Prestel response frames.
- Name and Address fields are completed automatically with the user's consent.

Simple vetting is carried out by Prestel as each field is completed. The EIP predefines the type of data expected in each field as numeric or alpha-numeric. In the event of an error, a line 24 message is sent to the user requesting that he re-enter that field.

Only the data in the three types of field is transmitted back to the EC. The text portion of the display is not sent but held temporarily in Prestel. The user may then repeat the data collection process without retrieving the frame from the EC. This makes the collection of large amounts of data more efficient by minimising PSS costs and increasing the rate of data capture.

How Gateway Works

Gateway operates by the integration of new software into the computer systems of Prestel and the EIP. For transmission between Prestel and external computers, PSS Datalines are used.

PROTOCOLS

The rules by which Prestel communicates with an EC are contained in two block transmission protocols, the PSS and Prestel Gateway (PG) protocols.

PSS Protocol

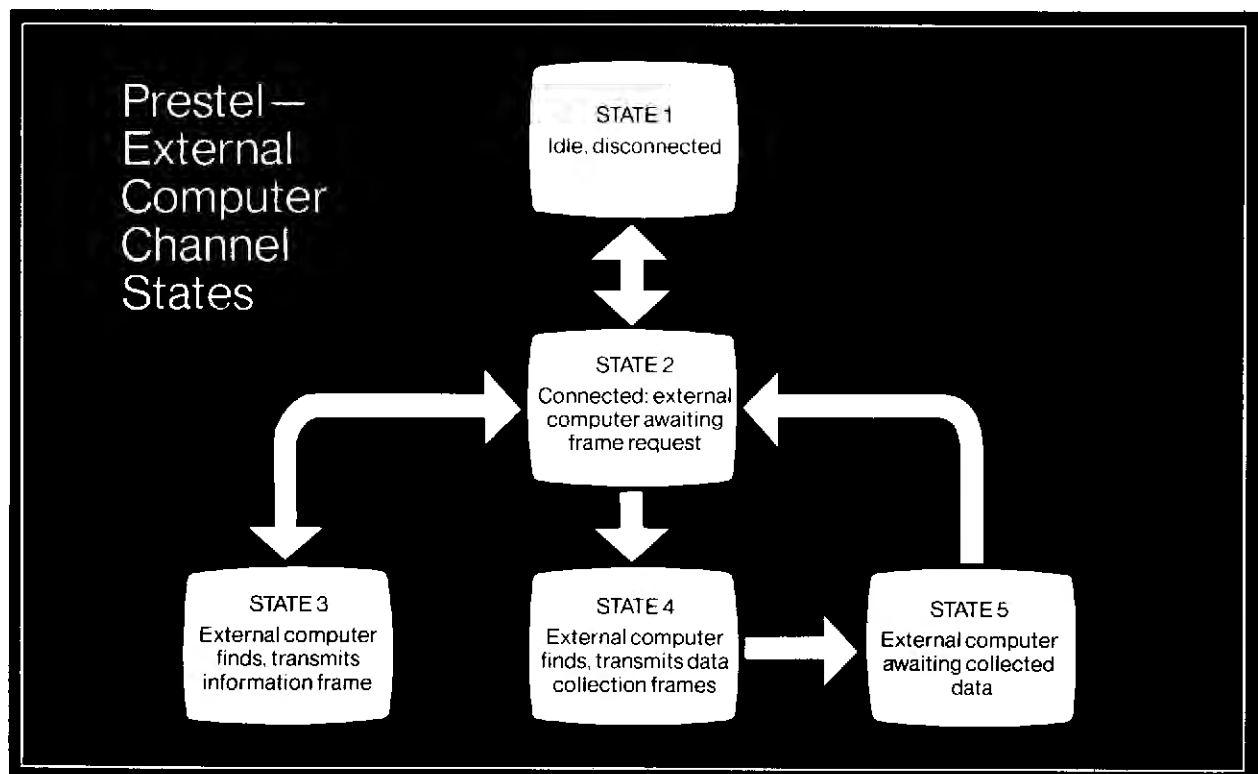
This is an international standard packet switching protocol, defining how to connect to and use the PSS network. It follows a CCITT recommendation, known as X25, which has been adopted with only minor variations by the majority of the world's telecommunications administrations. It will not be considered here in any depth as the interface is fully documented separately in the PSS Technical User Guide. (See Bibliography).

PG Protocol

This specifies how Prestel and the EC must interact. This protocol is the private language in which the EC and Prestel are required to converse, and should the EC fail to conform, the Gateway call will abort.

Dialogue consists of data blocks being passed between the two computers. Control over these exchanges is generally assymetric and lies with Prestel. The EC may not initiate a call and, with the exception of disconnection request blocks and unsolicited frames, the EC only sends a block in response to one sent from Prestel.

This diagram shows in simplified form the logical channel states that can exist between Prestel and the EC. It provides a convenient method of illustrating some typical dialogues which occur in a call.



GATEWAY CHANNEL STATES

Setting up a call

The Prestel-EC link is initially in the 'Idle' or 'Disconnected' state (1). When a user accesses a Gateway frame a connection request block is sent to the EC. This will generally reply with either a connection acknowledgement or refusal block. Following a connection acknowledgement, the Prestel-EC link moves to the 'Connected' state (2). Prestel automatically sends a specific frame selection block which has the effect of changing the link to the 'Information Retrieval' state (3). An EIP's 'Welcome' page is then transmitted in a frame data block via Prestel to the user's terminal. This returns the Prestel-EC link to the 'Connected' state (2).

This occurs without intervention by the user who is now free to proceed with either external information retrieval or data collection.

Information Retrieval

When the user requests a particular EC frame by keying an appropriate command, a frame selection block is sent from Prestel and the Prestel-EC link state is altered from 'Connected' (2) to 'Information Retrieval' (3). The frame is then returned to Prestel in a frame data block and is displayed to the user. The Prestel-EC link then returns to the 'Connected' state (2).

Data Collection

Starting with the Prestel-EC link in the 'Connected' state (2), the user requests a data collection frame. A frame selection block is sent to the EC as previously described: in this case, however, the Prestel-EC link moves to the 'Data Collection Sequence' state (4).

Each data collection sequence consists of between three and five frames. The first sent to Prestel is a text or 'skeleton' frame, which defines the characters displayed to the user. The second, a control frame, determines the size, position and number of fields. The third, 'prompt,' frame specifies the line 23 prompts used to help the user complete each unprotected field.

A maximum of 62 fields is possible, and to ensure that the data collection sequence has the capacity to specify prompts for all fields, the optional fourth and fifth frames in the Data Collection Sequence may also contain prompts if required. Once the complete frame sequence has been received, the Prestel-EC link moves to the 'Awaiting Data' state (5).

This entire operation is invisible to the user, to whom data collection appears as the retrieval of a single frame.

Prestel then displays the text frame to the user, with the protected fields completed, and the first line 23 prompt appears, corresponding to the first unprotected field. Completion of this field by the user leads Prestel to display the prompt for the next field, and so on. After the last field has been completed, Prestel asks whether the user wishes to send the collected data. If he decides not, he may simply access another frame. If he does wish it sent, a collected data block is transmitted, which only contains the contents of the fields. The EC responds with a data acknowledgement block. The user can then repeat the sequence with the same data collection frame. If this option is not taken up,

the Prestel-EC link is returned to the 'Connected' state (2). Two options are then available to the user:

- to request a different frame.
- to disconnect from the EC by either returning to the Prestel-resident database or by logging-off entirely.

Session Termination

The user can cause the change from 'Connected' to 'Disconnected' state in two ways:

- by selecting a 'Goodbye' frame in the normal information retrieval mode. This leads the EC to dispatch a 'Goodbye' page in a frame data block to Prestel, which sends back a disconnection request block. The EC responds with a disconnection acknowledgement block, and the EC-Prestel link is broken. The 'Goodbye' frame is displayed to the user, who can then access the Prestel resident database in the normal manner.
- by disconnecting his terminal. Prestel will then send a disconnect request thereby clearing the call.

Integration of Software at the External Computer

The PSS and PG protocols must be supported by the EC either by integrating new software into the IP's existing mainframe computer, or by using a front-end processor to handle the additional programs necessary to interface with Prestel. Amendments to the EC applications software may also be required to convert information in the EC into the Prestel frame

format before it is handled by the PG-protocol. Information may be stored in Prestel format, or alternatively be reformatted 'on the fly' as it is retrieved from the external database.

Integration of Software with Prestel

The PG protocol has been integrated with the software systems running on all Prestel computers. Software amendments at the application level were required to the billing, statistics and control functions, allowing Prestel to bill the user for the frame charges imposed by the EIP on frames retrieved from his database. Modifications were also required to the Editor functions to allow Gateway frames to be created.

When an EIP enters the Editor facility his identity is checked against a table of ECs. In this way, EIPs can only produce Gateway frames routing to their own approved ECs. Gateway frames are similar to Prestel — resident frames in that a charge may be imposed or the frame placed in a closed user group.

PSS Datalines

Communicating over PSS rather than by private circuits has the advantage that only a simple dataline to the nearest PSS exchange need be provided from each Prestel computer and EC. If private circuits were used, individual links would be required to each EC from every Prestel computer, resulting in a complex and expensive network. Furthermore, as the cost of sending calls over PSS is distance-independent, it is irrelevant where the EC is located.

On each occasion that a switched datacall takes place, a logical channel is set up through the PSS network. This logical channel, known internationally as a switched virtual circuit, lasts only as long as the call is in progress. This is in contrast to permanent datacalls, where a permanent virtual circuit is established between two designated addresses. Opting for switched datacalls provides greater flexibility to meet fluctuating demands on the network.

The speed of the datalines from the EC to the PSS exchange will be dependent on the expected traffic levels. Higher speed links can support more logical channels and therefore more simultaneous calls. The EIP must know the average call duration, the amount of data sent and the peak loading to be able to calculate the average number of users that a dataline of a given speed can support.

Another important feature of PSS is that datalines of differing speeds can interwork, allowing the EIP to lease the dataline which best suits his requirements.

Acceptance Testing

The PG protocol is specified in detail in the Prestel Gateway Technical Interface Specification (See Bibliography). Before access to an EC is permitted, a number of tests will be performed to ensure that the PG protocol has been properly implemented. If an EIP needs to make any subsequent system changes which might affect his Gateway operation, Prestel Headquarters must be informed.

External Computer Configurations

Implementing Gateway for most applications will require the conversion of existing commercial data-processing records and files into viewdata frames and indexes — a viewdatabase. The best configuration for any application will depend on a number of factors, which are set out in the table below.

Database Configuration Factors

the number of simultaneous users that the system must support
the traffic pattern
the acceptable response time
the size of database to be accessed
the volatility of the information
the computer resources available

For a database that changes regularly, it may be possible to perform a batch operation to produce a complete viewdatabase file, which could be mounted on a separate standalone computer or along with the source file on the existing mainframe. However, this approach has its drawbacks. If the database is a large one, say a bibliographic archive file, it may be uneconomic to keep two versions. It may also be physically difficult to transport such a database from one machine to another. Additionally, if the file requires instantaneous updating, as with seat reservation systems, it may be impractical to amend a separate viewdatabase.

In these cases, the only answer may be to create viewdata frames on request in real time. Depending on the extent of the mainframe resources available, it may be advantageous to have the indexes to the information as a separate file. This approach has been used when viewdata terminal access is grafted onto an existing data processing system. A front-end processor can then support all viewdata terminal traffic, administration, the database index, and simultaneously provide conversion from the existing terminal protocols to viewdata standards.

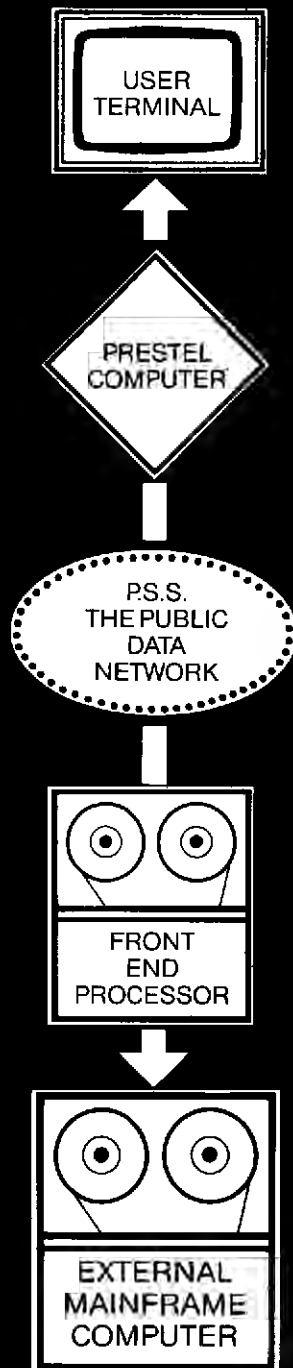
If this approach is used, care should be taken to ensure that the existing terminal handling routines can cope with the change in traffic, and that the overall response time is still within acceptable limits. Viewdata users are accustomed to instantaneous echoing of keyed characters, and to frame retrieval in under a second from the Prestel-resident database.

The use of a front-end processor allows some of the viewdata tasks to be performed outside the existing mainframe hardware. This approach can be extended by using Prestel's own database as a filter, either by setting up a body of frames to fulfil the majority of frame requests, or by removing all the non-interactive traffic from the external database.

A typical application is a seat reservation system where users could check the Prestel-resident database for a summary of availability. This would satisfy most general inquiries and allow brochures to be ordered by response frame. Only those users wanting to make a booking need access to the external database through Gateway. Filtering the inquiries minimises both the amount of computer power required at the EC and PSS costs.

Configurations for Data Storage

APPLICATION CHARACTERISTICS



Large number of simultaneous users
Frequently accessed frames
Low interactivity
Infrequently updated
National Networking

Transaction oriented
Protocol Conversion

Low accesses/frame and/or
Highly interactive
Bulk processing

Gateway Tariffs

Use of Gateway encompasses a number of interlinked British Telecom services, from public telephone network to public data network. In general, the user is liable for all charges up to the Prestel computer, and the EIP pays for the link from Prestel to his own machine.

User Tariffs

The telephone call to Prestel is generally at local rates and incurs dialled units charged on the telephone bill.

The cost of occupying a Prestel port, the use of Prestel's computers and network are recovered in the timebased charges levied for normal use of the system. The timebased charges for Gateway access are the same as for using Prestel-resident services.

Included in the normal Prestel user bill are the frame charges imposed by the EIP on frames retrieved from the external database. This bill will not distinguish between access to frames on Prestel and frames on an external database.

EIP Tariffs

These fall into 3 categories: PSS, Gateway and IP tariffs.

PSS Tariffs

The cost of using the PSS network and the provision of datalines is the responsibility of the EIP. He will receive separate bills from PSS.

An evaluation of the EIP's equipment will be conducted by British Telecom before permission to connect to PSS is given. This is to ensure that the PSS protocol is properly implemented.

Information on the level of PSS tariffs may be found in the booklet 'PSS Tariff' (see Bibliography) or from the inquiry point given in Further Information.

Gateway Tariffs

Prestel will charge an annual fee covering the administration of the EIP and Prestel/PSS datalines.

Payment of the Gateway fee shall entitle the EIP (who must be an IP or sub-IP) to associate as many Gateway pages as he wishes with one PSS address for his EC. A Gateway fee is payable for each PSS address, but up to 99 access points to the same EC can be provided, using the PSS Sub-Addressing Facility.

Prestel will charge for the BT resources required to test the EIP's implementation of the Gateway software.

IP Tariffs

The normal IP tariffs for Prestel-resident pages apply to Gateway frames. Gateway facilities will only be made available directly by Prestel to full IPs: Sub-IPs should therefore contact their umbrella IPs to negotiate on their behalf.

The EIP may recover his costs from the user through Prestel in 2 ways: —

- By frame charges.
- By placing the Gateway frame in a Prestel CUG and charging subscriptions.

Alternatively, he could charge a subscription for passwords.

How To Proceed

The Gateway Marketing Group at Prestel (see Further Information) will be pleased to explain in further detail how Gateway works, and how it could be implemented in your particular application.

The next stage is a detailed analysis of your requirements which normally identifies 3 main areas of work: —

- **Connection to PSS**

To be connected, your computer must be able to communicate using the X25 data network protocols, which allow the set up and reception of calls on the PSS network. Precise details of this interface are given in the PSS Technical User Guide (see Bibliography). Suitable hardware and software may be available from your computer supplier.

- **Interworking with Prestel**

Implementation of the Prestel Gateway protocols will normally be realised in software, and provides a mechanism for transferring viewdata frames and control information in a standard form to Prestel's computers. The Prestel Gateway Technical Interface Specification is available from the Gateway Marketing Group.

- **Tailoring of Existing Computer Records**

Some modification will probably be required to convert these into viewdata formats, and to match the database structures to your particular applications. This work could be performed by the software house supplying the Gateway protocols, or by your own applications staff.

Further Information

Further information and advice about how to proceed can be given by the Gateway Marketing Group, at the address given below.

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Glossary

Adaptor—an add-on unit enabling a conventional TV set to receive Prestel.

Asymmetric Duplex—a form of data transmission which allows communication in 2 directions simultaneously but at different speeds.

CCITT—Consultative Committee on International Telegraphy and Telephony, a sub-committee of the ITU, which makes international recommendations on telecommunications.

Character Protocol—A Data Transmission protocol which encodes each character as an individual autonomous block.

Closed User Group—Frames within an information provider's database to which access is restricted.

Combine Function—Facility enabling the IP to display a frame to the user that can be revised with additional or replacement characters without any prior need to clear the screen.

Control Frame—The section of the PG Data Collection process which defines the size and type of response fields.

Data Collection Frame—Frame containing fields to be completed by the user for collection by the external information provider.

Disconnection Request Block—The data block transmitted from either end of a Prestel/EC link to clear an individual call.

External Computer—Computer connected to Prestel via the PSS network to provide a Gateway database.

External Information Retrieval—Information retrieved by the user from an external computer.

Field - Protected—Field within a Data Collection frame which cannot be altered by the user.

— *Unprotected*—Field within a Data Collection frame which can be completed by the user.

Frame Selection Block—Data block sent to the EC when requesting a frame.

Front End Processor—A computer system connected to intercept and preprocess information before presentation to a mainframe computer.

Information Provider—an individual or organisation supplying and maintaining a section of information.

Information Retrieval—process by which user asks for information which is transmitted to him from or via the Prestel Database.

Keyword Search—an indexing system using words representative of the content of the information.

Line 24 Message — system message to user, eg the status of his current information request.

Logical Channel — An apparently continuous path of communication across a data network such as PSS.

Modem (MODulator — DEModulator) — An electronic unit enabling data to be transmitted over telephone lines.

Packet — A discrete quantity of data individually addressed and sequenced for communication on a data network.

Permanent Datacall — A channel between 2 designated addresses on a data network. Data may be sent at any time without the need to set up a call. Synonymous with the CCITT term 'Permanent Virtual Circuit.'

Prestel-Resident Frame — Frame normally stored in a Prestel computer, not an external private computer.

Prompt To User — Message displayed to the user on line 23 during a Data Collection sequence to assist in completing the unprotected fields.

Protocol — A set of rules governing the signals sent between communicating processes to ensure compatible working.

PSS — Packet Switched Service, British Telecom's public data network.

Real Time System — Any system in which the processing of data input occurs virtually simultaneously with the event generating the data.

Replication — The transcribing of the whole or part of an 'in-house' information store onto Prestel-resident frames.

Response Frame — A frame normally stored on the Prestel-resident database with which a user can send a message to the IP who created it.

Routing — Indexing structure to guide the user's information search.

Sub-Information Provider — An IP that contracts for the use of Prestel pages with an 'umbrella' IP rather than direct with Prestel.

Switched Datacall — user call on the PSS network using a Switched Virtual Circuit.

Text Frame — The initial frame of a Data Collection sequence, defining the characters to be displayed to the user. It forms the 'skeleton' or framework for protected, unprotected and 'Name and Address' fields.

Unsolicited Frames — Facility whereby a potentially unlimited succession of frames is transmitted to the user from the EC without user intervention.

User Friendly — System characteristics as seen by the user such as to make it appear attractive and simple to use compared with other computer systems.

Viewdata — Internationally standardised computer based systems which allow digitally-encoded text to be transmitted using telephone lines, decoded and displayed on suitably modified TV sets.

Viewdatabase — Computer information base formatted in viewdata frames and indexes.

Bibliography

PRESTEL INFORMATION

Prestel Gateway Technical Interface Specification

This specifies user, system and network interfaces and the requirements for attachment approval. Available from Prestel Headquarters.

Prestel Terminal Specification

The standard reference document defining British Telecom's requirements for inter-working with the telephone network and Prestel computers, and detailing the attachment approval process. Available from Prestel Headquarters.

Prestel—The Technology

This gives an overall technical description of the Prestel system, explaining how database, network and terminals operate. Available from Prestel Headquarters.

Prestel—The World Viewdata Service

This is a general information brochure which acts as a directory to the Prestel service. It provides a comprehensive view of Prestel facilities, information available on Prestel, cost and a brief look at future development.

Prestel User Directories

Quarterly magazines for the lay user. Each issue contains operating instructions, database indexes by subject and information provider, and lively comment on the latest developments in viewdata.

PSS INFORMATION

PSS Technical User Guide No 17

The guide gives a general introduction to PSS and describes access procedures for character and packet mode terminals and packet level procedures. Available from PSS Marketing, British Telecom.

PSS; A Basic Guide — the overview of how PSS works and what it can do.

PSS; Tariff — the tariff schedule.

PSS; Facilities — description and features of the service.

The 3 above brochures are available from PSS Marketing, British Telecom.



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